Date: February 5, 2003

To: T10 Committee (SCSI)

From: George Penokie (IBM/Tivoli)

Subject: SAS Fixes

1 Overview

During an internal review of SAS some areas which need clarification or improvements were discovered. This proposal points out those areas and suggests changes to SAS rev 3.

2 New Disconnect-Reconnect mode page bit

SAS allows data to be transferred in both directions for different I_T_L_Q nexus at the same time. Although this is a nice feature it may represent problems it an target starts doing this and an initiator is not capable of handling the data. To make sure both targets and initiators are in sync a bit should be defined in the Disconnect-Reconnect mode page byte 13 bit 0 as follows:

The multiple data direction enable (MDDE) bit indicates whether or not a target port may do simultaneous transmission and reception of data for different I_T_L_Q nexus. If the MDDE bit is set to zero the target shall not do simultaneous transmission and reception of data for different I_T_L_Q nexus (e.g., if a target port is receiving data for one or more I_T_L_Q nexus it is required to send status for all those I_T_L_Q nexus before transmitting data for any I_T_L_Q nexus). If the MDDE bit is set to one the target may do simultaneous transmission and reception of data for different I_T_L_Q nexus.

2.1 7.13.7.1 State description

A the end of this section the following note should be added:

> NOTE 1 A CLOSE may start being received in the next dword after receipt of a DONE, in the case of a SSP connection, after receipt of a EOFA, in the case of a SMP connection, or after receipt of a SATA_SYNC, in the case of a STP connection.

2.2 Terminology

The term << active connection >> is used a about 5 places in SAS. But it is not defined. I believe all connections are << active >> therefore the term << active >> should be deleted in all cases.

2.3 7.18.4.2.1.1 State description

The paragraph:

This state is the initial state and is the state that is used when the SMP state machine is activated and there is no active connection.

The statement << and there is no active connection >> should be deleted as none of the SMP state machines run if there is not connection.